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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,411	01/02/2004	Kiyoshi Honda	566.43395X00	2843

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MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER

PATEL, KAUSHIKKUMAR M

ART UNIT PAPER NUMBER

2188

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/749,411	Applicant(s) HONDA ET AL.	
	Examiner Kaushikkumar Patel	Art Unit 2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 8 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/2/2004 3/11/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on January 2, 2004 is being considered by the examiner to the content of the abstract provided by English translation. The US patent references submitted as IDS on March 11, 2005 being considered by the examiner. Foreign patent document 3127157 submitted on March 11, 2005 not considered by the examiner because no English translation was provided.

Drawings

3. The drawings are objected to because of following informalities:

Fig. 6, "sending destination" should be "destination".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
5. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. A statement that it contains no new matter must accompany the substitute specification filed.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-2, 6, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Terrell et al. (US 2005/0232285 A1) and (US 2003/0210686 A1, DOC 2 herein after, provided as reference) (Terrell herein after).

As per claims 1 and 8, Terrell teaches a virtualization controller which is connected to one or a plurality of storages and one or a plurality of ports connected to one or both of the host computer and storage and storage controller (fig. 4 and fig. 5, paragraphs [0033], [0035]), wherein each of said ports and said storage controllers comprises a virtualization processors (fig. 5, items 251-253) and holds the information between first identification and second identification, the first identification being used for said host computer to access storage area held by said storage and second identification being used to identify storage area, converts the data having first identification into data having second identification and transfers the data having second identification into first identification (taught as the storage devises are arranged as virtual arrays (paragraph [0033]) and host may access a data referring to a virtual storage address (first identification) without designating a particular physical storage address (second identification) depending upon virtual to physical correspondence by altering mapping data (paragraph [0036])), virtualization processor further including, access path management information (taught as a node (virtualization controller) includes switches and routers which keeps map (paragraph [0042]) of paths (paragraph [0084]) and when a request for changing access path is received access path management information is

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updated and data send/receive is carried out by the use of new access path (taught as the switches functions according to U.S. patent application ser. No. 10/120266, published as US 2003/0210686 A1 (DOC 2). DOC 2 teaches that router manages accesses through the different paths and creates and revises the routing information and also selects the alternate path (paragraph [0088] of DOC 2). Thus, Terrell implicitly teaches changing an access path and using data transfer through new access path.

As per claim 2, Terrell teaches network node provides administrative platform, which performs the resource management and path switching functions (paragraph [0035]). A node is connected to network inherently teaches third port as computers are known to be connected to the network through the ports.

As per claim 6, Terrell teaches that switch ports keep mapping of paths and virtual to physical address mapping (fig. 7, item 334) and control is made to execute virtualization process based on control information (taught as message is provided with routing information and mapping of addresses are performed based on this information, paragraph [0051]).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terrell et al. (US 2005/0232285 A1) as applied to claims 1-2 above, and further in view of Horn et al. (US 2004/0034751) (Horn herein after)

As per claims 3 and 5, Terrell teaches a method of address mapping and path switching as applied to claims 1 and 2 above, but fails to teach scheduling a path switching (claim 3) and scheduling path switching based on usage utilizations of the virtualization controller. Horn teaches a controller/virtualizer acquires real-time knowledge of storage volume workloads and utilization of paths and depending upon the cost function the traffic is balanced (i.e. the existing path is switched to new path) (see abstract, figs, 1-3, and paragraphs [0008], [0013]-[0015], and [0018]-[0021]. Horn teaches the path is optimized per command in real time. This increases the processing load on the controller.

It would have been obvious to one having ordinary skill in the art at the time of the invention would have modified the path switching system of the Terrell by teachings of Horn by scheduling the path switching (claim 3) depending upon the load utilization of the various components of the system to increase the performance of the system and by providing certain threshold limit on load of the components and then switching the path upon reaching that threshold to reduce the processing load on the controller (claim 5).

Allowable Subject Matter

10. Claim 7 is allowed.

11. Claim 4 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is an examiner's statement of reasons for allowance:

13. As per dependent claim 4, the prior art of the record fail to teach or suggest virtualization controller, which monitors the access types (i.e. reads/writes, proximal or identical access) and maintains as access history and depending upon this access history performs path switching management.

14. As per claim 7, the prior arts of the record fail to teach or suggest the method which detects the start-up timing of the switching process and monitors the access request issued to storage area which is a target of the switching process and queues the newly received requests during switching process and at the end of the switching process assigns the queued request to new path.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Odenwald (US 6,785,750 B1) teaches a method of dynamic load balancing between host and target in network environment and data is transferred by different routes.

Nahum (US 6,898,670 B1) teaches virtualized storage in SAN and management of virtual and physical memory. Virtualization manager in network switch through multiple access routes manages virtualization.

Lolayekar et al. (US 6,976,134 B1) teaches a system, which discovers resources in communication network with switch and classifies resources according to modified policies and provides dynamic load balancing.

Amir et al. (US 2005/0114464 A1) teaches a virtualization switch that optimizes data received from network to improve higher throughput.

Mercier et al. (US 2003/0005119 A1) teaches a data path engine coupled to SAN and provides policy criteria to select data paths.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaushikkumar Patel whose telephone number is 571-272-5536. The examiner can normally be reached on 8.00 am - 4.30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


kmp

Kaushikkumar Patel
Examiner
Art Unit 2188


7/6/06

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER